II. "On a Fermentation causing the Separation of Cystin." (Preliminary Communication.) By SHERIDAN DELÉPINE, M.B., B.Sc. Communicated by T. LAUDER BRUNTON, M.D., F.R.S. Received February 13, 1890.

During the months of March and April, 1889, I analysed for Dr. Lauder Brunton, and under his direction, a number of specimens of urine containing cystin. The estimation of the amount of this substance present in the samples examined was carried out by Löbisch's process, and revealed certain variations which were of interest as connecting the elimination of cystin with the processes of digestion. In carrying out this work, I was struck with the fact that the amount of cystin precipitated from the same specimen was greater under certain circumstances than under others. Thus, (1) when specimens were *strongly acidified with acetic acid*, as recommended by Löbisch, the precipitation took place more slowly than if the specimens were allowed to undergo a *spontaneous acid fermentation* (which never caused the reaction to become very strongly acid). (2.) When the fluids were *carefully filtered*, the precipitation of cystin was delayed, often for several days. (3.) When a specimen in which cystin had begun to separate was *carefully filtered*, the precipitation was interrupted for several days. (4.) When portions of a urine which was proved by collateral experiments to contain cystin were *kept at a temperature of* 60° C., no cystin could be separated afterwards by the usual processes. (5.) *Evaporation* did not seem to increase materially the amount of cystin obtainable from a given specimen. (6.) The largest amounts of cystin could be obtained by allowing the *specimens to stand at the ordinary temperature for several days*, provided the precipitate was separated whilst the urine was still acid. (7.) A similar amount of cystin could be obtained more rapidly by keeping the fluid at a *temperature of less than* 40° C. for twenty-four to thirty-six hours. (8.) When a drop of urine from which cystin was being deposited, and which contained a large number of bacteria and torulæ, was added to a carefully filtered portion of the same urine, a deposit of cystin occurred in the filtrate thus inoculated in twenty-four hours, the urine becoming at the same time full of bacteria and torulæ, while another portion of the same filtrate not inoculated deposited no cystin for ninety-six hours. I venture to suggest as the most probable explanation of the above results—

(1.) That the *simple* addition of an acid in which cystin is not soluble is not sufficient to separate cystin from the urine, and, therefore, that the *theory generally held as to the state of combination of cystin in the urine is probably inaccurate.*

(2.) That a compound exists in certain urines which under the *influence of a fermentation* yields cystin.

(3.) That the fermentation is due to the *growth of an organism*, which can apparently be separated from the urine by ordinary filtration, and must therefore be a *large organism, possibly a torula.*

(4.) That the cases recorded in which cystin has been found deposited in the kidneys and liver indicate that the *fermentation may begin in the system.*

III. "Some Stages in the Development of the Brain of *Clupea harengus*." By ERNEST W. L. HOLT, Marine Laboratory, St. Andrews. Communicated by Professor MCINTOSH, F.R.S. Received February 11, 1890.

(Abstract.)

The stages described are (i) newly-hatched or early larval; (ii) early post-larval; (iii) $\frac{1}{2}$-inch long; (iv) $\frac{3}{4}$-inch long.

The development of the pineal region is treated separately, and in this a fifth stage—$1\frac{1}{12}$-inch long—is introduced.

In the early larval stage the downward flexure of the fore part of the brain is very noticeable. It appears due to the general conformation of head at this stage. The cerebral lobes are short; the anterior commissure is well marked. The white matter of the cerebrum is divided into two patches on each side, from the most ventral of which the short stout olfactory nerves pass to the bases of the nasal sacs, now closely opposed to the cerebrum. The roof of the cerebrum is very thin, passing into the thicker roof of the thalamencephalon. The tips of the optic thalami are wholly vesicular. A diverticulum of the 3rd ventricle extends downwards and backwards, its distal extremity underlying the optic commissure. The broad ventral commissure of the infundibulum, noticed in *Anarrhicas*,* is well marked. A commissure shuts off the lumen of the infundibulum from the hind part of the 3rd ventricle immediately in front of the splitting off of the infundibulum. The optic ventricles do not appear in the front part of the mid-brain, and are only partially developed further back. The tori semicirculares are present in the hind part of the mid-brain as mounds on either side of the central fissure of the cerebral mass. The valvula appears in transverse section as a pair of ridges externally to the tori, before it shuts off the aqueduct of Sylvius. The cerebellar fold is very short; the pituitary body is a roundish mass of deeply staining cells, opposed ventrally to the membranous roof of the mouth, and clasped in front and at the sides

* McIntosh and Prince, 'Edinb. Roy. Soc. Trans.,' vol. 35.